

CLAIMS

What is claimed is:

1. An apparatus to output multiple streams of stored signals, each stream encoded at one of a plurality of bit rates and read from recordings, comprising:
a streaming device to detect the one of the bit rates used to encode each stream of the stored signals on the recordings and to output each stream as packet isochronous signals at the one of the bit rates.
2. An apparatus as recited in claim 1, wherein said streaming device outputs each stream of the packet isochronous signals with an average bit rate within one bit per second of the one of the bit rates at which the stored signals corresponding thereto were encoded.
3. An apparatus as recited in claim 1, wherein said streaming device outputs each stream of the packet isochronous signals with a jitter of less than two milliseconds.
4. An apparatus as recited in claim 1, wherein said streaming device comprises a plurality of timer circuits, each including
a base counter to count a truncated period for transmission of packets; and

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5 a dithering circuit to indicate transmission of one of the packets one clock pulse later than the truncated period, a predetermined number of times within a dither cycle.

5. An apparatus for simultaneously reproducing multiple recordings from storage devices for transport on a network, comprising:

buffers to receive stored signals from the multiple recordings, each recording containing stored signals encoded at one of a plurality of bit rates;

5 a control unit, coupled to said storage devices, to receive requests to reproduce the multiple recordings and to control playback of the stored signals by the storage devices;

10 a real-time pump, coupled to said buffers and said control unit, to detect the one of the bit rates used to encode the stored signals on each of the multiple recordings and to output transport stream packets, each transport stream packet based on the stored signals from one of the multiple recordings; and

15 a network interface, coupled to said control unit and said real-time pump, to receive the transport stream packets in corresponding queues and to output over the network multiplexed packet isochronous signals corresponding to the stored signals on the multiple recordings requested to be reproduced, each stream of the packet isochronous signals on the network having an average bit rate of the one of the bit rates used to encode the stored signals corresponding thereto.

6. An apparatus as recited in claim 5, wherein said network interface outputs each stream of the packet isochronous signals with the average bit rate within one bit per second of the one of the bit rates used to encode the stored signals corresponding thereto.

7. An apparatus as recited in claim 5, wherein said network interface outputs each stream of the packet isochronous signals with a jitter of less than two milliseconds.

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8. An apparatus as recited in claim 5, wherein said video pump comprises a channel timing module, coupled to said real-time pump, to control timing of output of the transport stream packets.

9. An apparatus as recited in claim 5, wherein said channel timing module comprises a plurality of two-stage counters and channel status logic units corresponding to said two-stage counters, coupled to said real-time pump, each two-stage counter corresponding to one of the multiple bit rates of recordings and including

a base counter to count a truncated period for transmission of packets; and

a dithering circuit to indicate transmission of the transport stream packets within a corresponding stream one clock pulse later than the truncated period, a predetermined number of times within a dither cycle.

10. A system for transmitting multiple streams of stored signals to receiving devices, comprising:

at least one playback device to access recordings, each recording containing stored signals encoded at one of a plurality of bit rates;

a streaming device, coupled to said at least one playback device, to receive requests to reproduce specified recordings, to detect the one of the bit rates used to encode the stored signals on each of the specified recordings, and to output a stream of packet isochronous signals based on the stored signals of the specified recordings at the one of the bit rates for each of the specified recordings; and

a network, coupled to said streaming device and the receiving devices, to deliver each stream of the packet isochronous signals to the receiving devices.

11. A system as recited in claim 10, wherein said streaming device outputs each stream of the packet isochronous signals with an average bit rate within one bit per second of the one of the bit rates at which a corresponding recording was encoded.

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12. A system as recited in claim 10, wherein said streaming device outputs each stream of the packet isochronous signals with a jitter of less than two milliseconds.

13. A system as recited in claim 10, wherein said streaming device comprises a plurality of timer circuits, each including

a base counter to count a truncated period for transmission of packets; and

5 a dithering circuit to indicate transmission of one of the packets one clock pulse later than the truncated period, a predetermined number of times within a dither cycle.

14. A method of transmitting multiple streams of stored signals to receiving devices, comprising:

reading the stored signals from recordings, each recording encoded at one of a plurality of bit rates;

5 detecting the one of the bit rates used to encode the stored signals for each stream; and

outputting to the receiving devices each stream of stored signals as packet isochronous signals at the one of the bit rates.

15. A method as recited in claim 14, wherein said outputting outputs each stream of the packet isochronous signals with the average bit rate within one bit per second of the one of the bit rates used to encode the stored signals corresponding thereto.

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~~15~~. A method as recited in claim 14, wherein said outputting outputs each stream of the packet isochronous signals with a jitter of less than two milliseconds.

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~~16~~. A method as recited in claim 14, wherein said outputting of each packet of isochronous signals occurs on a timing pulse produced from clock pulses

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generated at a clock rate, the timing pulse produced with an average period of greater precision than the clock rate.

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N. A method as recited in claim ¹⁷~~16~~, further comprising producing timing pulses by

counting the clock pulses for a truncated period based on the average period; and

generating the timing pulses one clock pulse later than the truncated period, a predetermined number of times within a dither cycle.

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